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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,594	09/19/2005	Zhikuan Wang	63795.8008.US00	7722
26694	7590	12/07/2007	EXAMINER	
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			ART UNIT	PAPER NUMBER
			1793	
			MAIL DATE	DELIVERY MODE
			12/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/549,594	Applicant(s) WANG ET AL.	
	Examiner Ngoc-Yen M. Nguyen	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some    \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicants are requested to point out support in the instant specification, by page and line numbers, for "*about 30%*" as required in the leaching step of claim 1; for "*dissolving the precipitates*" in "*adjusting pH*" step in claim 2; for "*about two to eight time*" in claims 10 and 18; "*about 50%*" in claim 12, "*about 1 to 20 hours*" in claims 13 and 17; for "*about 30 wt%*" in the leaching of claim 15. For the "*about*" limitation, it would extend the claimed ranges to include values higher or lower than the disclosed ranges.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1 and 15, it is unclear if the "primary alkali metal chromate" in the last step is the intended product "chromate" as mentioned in the preamble.

In claim 5, it is unclear if "the alkali metal hydroxide" refers to alkali metal hydroxide in which step, i.e. decomposing step, the leaching step or both.

In claim 7, it is unclear if "the aqueous solution of the alkali metal hydroxide" refers the aqueous solution of alkali metal hydroxide in either decomposing step or leaching step in claim 1 or the dissolving step in claim 2.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over CN-1,240,763.

CN '763 discloses a process for producing sodium chromate and sodium bichromate by reacting chromium ore, caustic soda in the presence of pure oxygen at a temperature of 500-600°C for one hour, the ratio of chromium to caustic soda is 1:1-7.5. The sodium chromate or bichromate is recovered and subjected to purification process which includes water extraction, acidifying step, evaporation and crystallization as required in the instant claims (note Example 1 and claim 3). CN '763 fairly suggests that some of liquid streams can be recycled (note Figure 2).

CN '763 does not specifically disclose the water amount, the pH value for the acidifying step.

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the process conditions, such as those mentioned above, in the process of CN '763 in order to obtain the best results.

For claims 1-14, CN '763 does not disclose that the sodium hydroxide used is an aqueous solution of sodium hydroxide.

However, CN '763 does disclose that the mother liquor can be recycled back to the chromite ore decomposition step. Even though CN '763 does teach that water (at least some) can be removed before the recycling step, however, it would have been obvious to one skilled in the art to recycle the mother liquor directly to the decomposition step because at high temperature in this step, the water would inherently be removed to eventually form the molten mixture as desired in CN '763.

For claims 15-20, CN '763 teaches that the use of oxygen as the oxidizing agent increases the oxidation speed and overcomes the problems encountered when other oxidizing agents, such carbon dioxide, solid oxidizing agent were used (note translation, paragraph bridging column 8-9).

Thus, it would have been obvious to one skilled in the art to use other oxidizing agent, i.e. eliminate the use of the oxygen as the oxidizing agent, with the loss of the advantages from using the oxygen as disclosed in CN '763.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over CN 1,226,512 in view of CN '763.

CN '512 discloses a process for producing chromate by oxidative decomposing a chromite in NaOH molten salt liquid flow medium, water leaching to obtain a  $\text{Cr}^{+6}$  leaching solution, crystallizing chromate crystals (note claim 1).

The temperature for the decomposing step is 500-550°C and the amount of base to ore is 3:1 to 6:1 and the reaction time is 1-6 hours (note translation, page 5, item (i)).

For the other process conditions, without a showing of criticality or unexpected results, it would have been obvious to one of ordinary skill in the art to optimize the process conditions in CN '512 in order to obtain the desired chromate product.

The difference is CN '512 does not disclose the same steps for purifying the chromate product.

CN '763 is applied as stated above to teach a conventional process of purifying chromate.

It would have been obvious to one of ordinary skill in the art to use the process of purifying the chromate, as suggested by CN '763, for the process of CN '512 because such process is a conventional for purifying an analogous product.

Applicant's arguments filed September 6, 2007 have been fully considered but they are not persuasive.

Applicants argue that CN '763 discloses a temperature of 500-600°C while Applicants' claims require a reaction temperature of 200-500°C.

The temperature range disclosed in CN '763 does overlap the claimed range at "500°C".

Applicants argue that CN '763 does not teach the use of the aqueous solution of the alkali metal hydroxide at a concentration of up to 30 wt% to leach.

The claimed range of "up to 30 wt%" would include values that are so close to zero, thus, no patentable difference is seen between the claimed aqueous solution of the alkali metal hydroxide at such low concentration and the water used in the leaching step of CN '763.

Applicants argue that CN '763 does not disclose the use of an aqueous solution in the decomposition.

CN '763 discloses that the mother liquor can be recycled, thus, it would have been obvious to one skilled in the art to feed the mother liquor directly to the mixing step (1) of CN '763 because at high temperature in step (2), the water would eventually removed and a molten mixture would still be formed as desired in CN '763.

Applicants argue that CN '763 teaches away from using any solid oxidant including sodium nitrate, potassium nitrite and other nitrates.

In CN '763, solid oxidants were not used because they would lower the quality of product and CN '763 teaches the use of oxygen as the oxidizing agent to obtain high quality product at reduced cost and less chromium waste. Thus, omission of an element (the use of oxygen as the oxidizing agent) and its function (to produce high quality product at low cost and less waste) is obvious if the function of the element is not desired, *Ex parte Wu*, 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989). It should be noted that in Applicants' claims, no quality is required for the chromate product.

Applicants argue that the claimed method shows unexpected results of high recovery and high yields as shown in examples 1-12.

Only Examples 5, 7, 9 and 12 disclose the use of solid oxidant, however, there is no disclosure for the conversion rate in these examples. The purity of chromate crystals as disclosed in the examples are for the chromate after the purification steps (steps in Applicants' claim 2).

The rejection over CN '512 in view of CN '763 is maintained for the same reasons as stated above.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

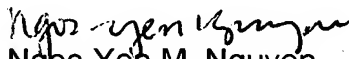
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.



Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner is currently on a Part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Ngoc-Yen M. Nguyen  
Primary Examiner  
Art Unit 1793

nmn  
November 26, 2007